REMARKS:

This paper is herewith filed in response to the Examiner's Office Action mailed on December 27, 2007 for the above-captioned U.S. Patent Application. This office action is a rejection of claims 1-8 of the application.

More specifically, the Examiner has rejected claim 1 under 35 USC 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which the applicant regard as the invention; rejected claims 1-8 under 35 USC 103(a) as being unpatentable over Motta (US6,650,795) in combination with Okada (US6,977,683). The Applicants respectfully traverses the rejection.

Claims 1-4 have been amended. Claims 5-8 have been cancelled. Claims 9-11 have been added. Support for the amendments can be found at least in paragraphs [0049] through [0053] of the published application. No new matter is added.

Regarding the rejection under 35 USC 112, second paragraph, the Applicants note that claim 1 has been amended similarly as suggested by the Examiner. The rejection is seen as overcome and the rejection should be removed.

Regarding the rejection of claim 1 under 35 USC 103(a) the Applicants respectfully traverse the rejection.

The Applicants note that an exemplary embodiment of the invention relates to removing part or all of interpolation processing performed in first interpolation steps by performing intermittent processing steps on input image data on which the first interpolation processing steps have been performed and to perform second interpolation processing steps on data obtained in the removal process so as to prepare a second output image data.

Motta relates to an electronic color image capturing system that reduces undesirable artifacts,

such as color fringing at the edges, (abstract). Motta describes, in the background section, several conventional methods in the operation of conventional digital still cameras, (col. 1, lines 14-17). In one of these conventional methods Motta discloses a one-chip approach where each photosensitive CCD element functions to capture a single pixel of a given color in the final digital still image. Regarding this method Motta discloses that at any given pixel location, only one color of light can be sensed, namely, the color of the filter element at that location and that additional color information at that pixel location is lost and must be inferred from neighboring pixels through a process such as interpolation. Immediately following this disclosure Motta appears to teach away from an interpolation process where Motta further discloses "This process can lead to problems if incorrect color information is assigned to pixels," (col. 2, lines 7-15).

Further, as an apparent solution to the problems associated with the conventional methods Motta discloses an image sensor which includes a plurality of individual photosensitive elements arranged in an array and **where the photosensitive elements represent a corresponding pixel location in the image** (col. 2, lines 42-45). According to Motta an optical element shifts the light transmitted to the image sensor so that a portion of the incident light that would otherwise fall on a single photosensitive element is divided between at least two adjacent photosensitive elements. According to Motta blurring and undesirable artifacts such as color fringing at the edges are thereby reduced in the reproduced color images, (col. 2, lines 39-54).

Claim 1 as amended recites:

> An apparatus, comprising: <u>a processor configured to perform first interpolation processing steps on input image data so as to prepare a first output image data; a retrial module configured to intermittently remove at least a</u> part of <u>interpolation processing preformed in</u> the <u>first interpolation processing steps from</u> the <u>first output</u> image data; and <u>the processor further configured to perform at least one of a second interpolation</u> processing <u>step on</u> data obtained <u>in the removal process so as to prepare a second</u> output image data.

Firstly, the Applicants submit that for at least the reasons already stated Motta can not be seen to relate to "a processor configured to perform first interpolation processing steps on input image data so as to prepare a first output image data," as in claim 1. This is seen to be the case for at

least the reason in the background section, as stated above, Motta appears to teach away from conventional methods using interpolation. Further, in the description section Motta discloses an image sensor which includes a plurality of individual photosensitive elements which represent a corresponding pixel location in the image. Moreover, the Applicants can not find anywhere in Motta where it is disclosed or suggested a process including interpolation processing steps on input image data so as to prepare a first output image data as in claim 1.

In regards to the rejection of claim 1 the Examiner states:

> "Figure 3 [of Motta], numeral 26-"Digital Signal Processing" can be best understood as the general data operation processing means), [...] **comprising: removal means (Refer to Figure 3, numeral 32**)," (emphasis added).

The Applicants note that the Examiner appears to equate the JPEG file format conversion component 32 (see col. 3, lines 56-67) with a remover as previously in claim 1. The Applicants further note that claim 1 has been amended to recite in part "a retrial module configured **to intermittently remove at least a part of interpolation processing preformed in the first interpolation processing steps from the first output image data**."

Regarding Figure 3 Motta discloses:

> "Referring to FIG. 3, an array 20 of color filter elements overlies the forward side of the image sensor 18. [...] The digital output of the A/D converter 24 is fed to a digital signal processing (DSP) circuit 26, the output of which is fed through a buffer memory 28 to a control circuit 30. The control circuit 30 receives power from a battery 31 and includes a micro-controller or microprocessor as well as a **JPEG file format conversion component 32** and an EXIF file format component 34," (col. 3, lines 63-67), (emphasis added); and

> "**The JPEG file formal conversion device compresses the output received from the DSP 26** through the buffer memory 28 in accordance with a well known JPEG data compression standard," (col. 4, lines 45-49).

Here Motta appears to disclose that the JPEG file format conversion component 32 compresses the output received from the DSP 26. The Applicants contend that this process is not seen to

relate to **intermittently removing interpolation processing preformed in the first interpolation processing steps** as in claim 1.

The Applicants note that Motta may be seen to disclose an image capturing system as stated by the Examiner. However, the Applicants contend that Motta can not be seen to disclose or suggest at least where claim 1 relates to performing first interpolation processing steps on input image data so as to prepare a first output image data and intermittently removing at least a part of interpolation processing preformed in the first interpolation processing steps.

In addition, in the rejection of claim 1 the Examiner states:

> "Okada discloses: removal means for removing (Refer to Figure 9, numeral 43 or 49-"Compress"), from the input image data (Refer to Figure 9, numeral S41), part or all of the steps of an operational processing sequence performed for the input image data (**Personal Computer 50 at Figure 9 can proceed with any number of operational processing as shown at Figure S50, S51 and 553 to remove the operational processing done earlier for the input image data**) and data processing means (Refer to Figure , numeral 50-"data processing" occurs via the microprocessor of the personal computer —numeral 50 as shown), for performing other operational processing steps for data obtained by the removal means and for preparing output image data (At personal computer —numeral 50 (Figure 9), the "other operational processing steps", for example, "expand"-numeral S51 and "interpolation" - numeral S46) can all be performed at 543-45 which has obtained removal means-S49 "compress" and will thus prepare the output image data-528 "Image Display" as shown at Figure 9)."

Regarding Figure 9 Okada discloses:

> This personal computer 50 has a dedicated software program that enables it to read the filter alignment data input together with the R, G and B complete pixel data and **to detect from the complete pixel data, based on the filter alignment data, the image data <u>prior</u> to the performance of interpolation for missing pixels** in the digital camera 41," (emphasis added), (col. 7, lines 35-40).

The Applicants submit that Okada appears to disclose merely taking image data prior or before **a performance of interpolation** for missing pixels. The Applicants can not find in all of Okada

where it is disclosed or suggested an **intermittent removal of at least a part of interpolation processing** as in claim 1. The Applicants contend that Okada can not be seen to disclose or suggest at least where claim 1 relates to **intermittently removing a part of interpolation processing preformed in the first interpolation processing steps** from the first output image data.

The Applicants respectfully submit that neither Motta nor Okada can be seen to relate to performing first interpolation processing steps on input image data to prepare a first output image, intermittently removing at least a part of interpolation processing preformed in the first interpolation processing steps, and performing a second interpolation processing step on data obtained in the removal process so as to prepare a second output image data as in claim 1.

Furthermore, the Applicants contend that although it is not clear the Examiner also appears to combine signal processing in Motta with an operation of the the personal computer 50 in Okada. The Applicants respectfully note that as stated above Motta is not seen to disclose a processor configured to perform first interpolation processing steps on input image data so as to prepare a first output image data. Whereas is as stated above Okada discloses a method where image data is taken prior to interpolation for missing pixels. Therefore, the Applicants contend that for at least this reason one skilled in the art would not be motivated to combine Motta and Okada. Moreover, the Applicants contend that even if the references cited were combined, which is not agreed to be proper, for at least the reasons already stated the combination would still not disclose or suggest claim 1.

For at least the reasons stated the Applicants contend that the references cited can not be seen to disclose or suggest claim 1 and the rejection of claim 1 should be removed.

Further, it is noted that claims 2 and 9 recite in part "the processor further configured to perform an arbitrary color interpolation processing step and an arbitrary image quality correction step that are more complicated than the removed interpolation step." The Applicants note that this language is supported at least where the published application discloses:

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"An interpolation process that requires a more complicated operation, an increased amount of operational processing and a greater amount of processing line memory can be employed as another interpolation method. Similarly, a process that requires a more complicated operation, an increased amount of operational processing and a greater amount of processing memory can be employed as an edge enhancement process that is included in other image quality improvement processing," (paragraph [0054]).
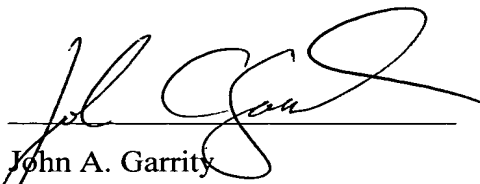
In addition, for at least the reason that claim 4 recites similar features of claim 1 the references cited are not seen to disclose or suggest claim 4 and the rejection should be removed.
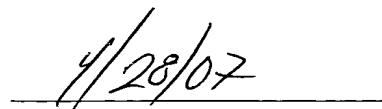
Further, for at least the reason that claims 2-3 and 11, and 9-10 depend from claims 1 and 4, resepectively, the references cited are not seen to disclose or suggest claims 2-3 and the rejections of these claims should be removed.

Based on the above explanations and arguments, it is clear that the references cited cannot be seen to disclose or suggest claims 1-4 and 9-11. The Examiner is respectfully requested to reconsider and remove the rejections of claims 1-4 and 9-11 and to allow all of the pending claims 1-4 and 9-11 as now presented for examination.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted:

_____   ___1/28/07_____
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